

REMARKS

Claims 1-20 are pending. The specification has been amended to correct a typographical error. No new matter has been added.

Objections to the Specification

The Examiner objects to the specification for allegedly lacking headings. Please note that, in the Preliminary Amendment submitted with the initial filing of the application, the specification was amended to include the appropriate headings and a brief description of Figures 1-15. Applicants respectfully request that the headings and brief description of the figures of the Preliminary Amendment be entered. In light of the Preliminary Amendment, the objection is believed to be rendered moot. Reconsideration and withdrawal of this objection is requested.

Rejections under 35 U.S.C. § 112, first paragraph

The Examiner rejects claims 1-20 under 35 U.S.C. § 112, first paragraph, for allegedly lacking written description requesting clarification of part d) of claim 1 and part e) of claim 19. Applicants respectfully traverse the rejection.

The Examiner states that the specification is allegedly silent regarding a description of claim 1 part d) and claim 19 part e) and requires clarification. Applicants respectfully disagree that the application is silent regarding steps d) and e). Step d) of claim 1 is described in the specification at page 9 lines 13-31. Furthermore, the specification starting at page 10 line 17 through page 11 line 2 teaches step d) first and thereafter part e). Additionally, Figure 1 depicts the overall process.

The invention relates to a high throughput analytical method. The process allows for two analyses; a first analysis being the analysis and quantification of individual substances and their masses, and, second, the analysis of all masses in a substance mixture. See specification page 11 lines 28-31. In the first analysis, after ionization in Q1, a fragmentation voltage is applied to Q2

in the presence of collision gas resulting in the formation of one of the fragment ions which is then identified in the analytical quadrupole Q3 and also quantified. Thus, the direct voltage applied to Q2 allows for election of useful fragment ions, which are then analyzed. See specification page 10 lines 21-31. In the second analysis, after ionization in Q1, the masses of all ions present in the mixture are analyzed in Q3, without the fragmentation step in Q2 by not applying a fragmentation voltage. Sources of error are eliminated by allowing mass detection using Q3. See specification page 10 line 33 through page 11 line 2; see also Figure 1.

The Examiner questions aspects of the apparatus of the mass spectrometer, such as the device that switches the acceleration voltage on and off, and the delay device that controls the quadrupole. Applicants wish to point out that the claims are directed to methods for analyzing mixtures and not to the apparatus of the mass spectrometer. Furthermore, as described in the specification at page 8 lines 37-47, triple quadrupole instruments are standard instruments and all quadrupole mass spectrometers known to those skilled in the art can be used for carrying out the invention. Additionally, the specification at page 10 lines 1-11 describes the quadrupoles used in the triple quadrupole spectrometers.

In view of the above remarks, reconsideration and withdrawal of this rejection is respectfully requested.

Rejection Under 35 U.S.C. § 102(b)

Claims 1, 6, 9-11, 13 and 16-18 were rejected as being anticipated by Tanner et al. (hereinafter "Tanner"). Applicants respectfully traverse.

Tanner does not anticipate the subject matter of claims 1, 6, 9-11, 13 and 16-18. Tanner discloses a mass spectrometry method for analyzing mixtures of substances involving a decrease in isobaric interference signals (see Tanner, abstract and column 1 lines 58-62). In Tanner, the mixtures of substances are ionized before analysis by means of plasma (Tanner, column 3, line 55-60), followed by (1) selection of the ion of interest in a first quadrupole (Q1) (Tanner, column 11 lines 52-67; (2) fragmentation of the selected ion through correct selection of a collision gas

and a DC voltage in a second quadrupole (Q2), which serves to eliminate other ions already present in order to allow measurement of the selected ion (see, for example, Tanner column 6 lines 36-41); and (3) analysis of the masses of the fragments either in a third quadrupole (Q3) or TOF spectrometer adjusted to measure the selected element. (See Tanner column 2 lines 1-38, and the English translation of the International Preliminary Examination Report, pages 3-5).

The present method is completely different than the method disclosed in Tanner. In the present invention, the ion is elected in step (c) of claim 1 which was created during the fragmentation in Q2 (step (b)), whereas in Tanner the election of the ion of interest is already present in the first process step in Q1. Furthermore the reactive gas in Tanner is provided in the ion transmission device, i.e. Q1 (see, for example, Tanner column 17 claim 1(i)), whereas the collision gas in the present method is provided in Q2. The voltage applied to Q2 in Tanner is to suppress certain ions that resulted from the fragmentation, whereas in the present method, the voltage used in Q2 is to render specific ions usable for further measurement (See English translation of the International Preliminary Examination Report). In the present method the fragmentation generates the elected ion, whereas the fragmentation in Tanner is used for eliminating other ions already present. Therefore, the fragmentation step between Tanner and the present invention is used for opposite purposes.

Furthermore, as mentioned above, in the present invention, the process allows for two analyses. In the first analysis, after ionization in Q1, a fragmentation voltage is applied to Q2 in the presence of collision gas resulting in the formation of one of the fragment ions which is then identified in the analytical quadrupole Q3 and also quantified. Thus, the direct voltage applied to Q2 allows for election of useful fragment ions, which are then analyzed. See specification page 10 lines 21-31. In the second analysis, after ionization in Q1, the masses of all ions present in the mixture are analyzed in Q3, without the fragmentation step in Q2 by not applying a fragmentation voltage. Thus, the selection of masses in Q1, the fragmentation in Q2 and analysis in Q3 are carried out separately from the process steps (a) to (c), however, without a voltage being applied in Q2 in order to compare the results both with and without a voltage (step (d)).

With no voltage being applied in Q2, all the ions present in the mixture of substances after ionization are analyzed. Tanner does not teach this method.

Reconsideration and withdrawal of this rejection is respectfully requested.

Rejections under 35 U.S.C. § 103(a)

Claims 2-3, 7-8, 12, 14-15 and 19-20 were rejected under 35 U.S.C. § 103(a) as obvious over Tanner.

Applicants respectfully disagree with the Examiner and traverse the obviousness rejection. To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. See MPEP § 2143.03. Tanner does not disclose or teach all the claim limitations. Therefore, Tanner does not obviate the subject matter of claims 2-3, 7-8, 12, 14-15 and 19-20.

As explained above, the methods disclosed in Tanner and in the present invention are totally different and solve different technical problems. The present invention relates to a high throughput analytical method. In the present invention, the solution is achieved according to the method of claim 1 in that, by applying and removing a voltage in Q2, one ion obtained by fragmentation or all of the ions present in the mixture as a result of ionization are analyzed. Thus, applying and removing a voltage in Q2 allows for the analysis of a single elected fragment ion or the masses of all the ions present in the substance mixture. Nothing in the disclosure of Tanner suggests this method. Rather Tanner has an opposite teaching where the voltage applied in Q2 eliminates ions produced by fragmentation from the collision gas used in Q1. Therefore, claim 1 is not anticipated or obvious from the disclosure of Tanner. For the same reasons claim 19 is not obvious from the disclosure of Tanner.

The Examiner has not established a *prima facie* case of obviousness for the subject matter recited in the claims 2-3, 7-8, 12, 14-15 and 19-20. The Examiner acknowledges that Tanner does not disclose a chromatographic separation (claims 2 and 14), an HPLC separation (claim 3), atomizing the mixture in an electrical field (claim 7), ions having a mass charge between 1 and

100 (claim 8), high-throughput screening (claim 12), or ionizing the mixture by desorbing the mixture on a surface or by atomizing the mixture in an electrical field (claim 19). The Examiner has not cited any additional references. The Examiner alleges that these would be obvious variations in design over Tanner for one skilled in the art and that these obvious variations in design are all well known in the art. The citation to “basic knowledge” or “common knowledge” of one of ordinary skill does not establish why known techniques would be used within the context of what is being claimed without evidence or even an explanation. All the claim limitations have thus not been taught or suggested by the prior art which is required to establish *prima facie* obviousness. The Examiner has not met his burden of establishing a *prima facie* case of obviousness.

Furthermore, if an independent claim is nonobvious then any claim dependent therefrom is nonobvious. *See In re Fine*, 837 F.2d 1071, 1076 (Fed. Cir. 1988). Claim 1 was not included in the obviousness rejection. Because claims 2-3, 7-8, 12, and 14-15, and 19-20 are dependent on claim 1 (directly or indirectly) or comprise all the limitations of claim 1 (claim 19-20), they are thus likewise nonobvious.

Reconsideration and withdrawal of this rejection is respectfully requested.

Objection to Claims

Applicants respectfully thank the Examiner for indicating that claims 4 and 5 are objected to as depending upon a rejected base claim, but would be allowable if rewritten in independent form.


CONCLUSION

For at least the above reasons, Applicants respectfully request withdrawal of the rejections and allowance of the claims.

Accompanying this response is a petition for a one month extension of time to and including October 16, 2006, pursuant to 37 CFR § 1.7, to respond to the Office Action mailed

June 15, 2006 with the required fee authorization. No further fees are believed due. If any additional fee is due, the Director is hereby authorized to charge any deficiency in the fees filed, asserted to be filed or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our Deposit Account No. 03-2775, under Order No. 13195-00005-US, from which the undersigned is authorized to draw.

Respectfully submitted,

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